and all will for any length of time retain sufficient moisture to prevent brittleness. The salt being neutral, no fear need be apprehended of its injuring colour or texture, while its antiseptic properties will aid in the preservation of matters liable to decay.

BIBLIOGRAPHICAL NOTICES.

A Manual of Natural History for the use of Travellers. By Arthur Adams, W. B. Baikie, and Charles Barron. London, 1854. Van Voorst. 12mo.

"The design of the following pages," say the authors in their preface, "is to endeavour to supply what seems to be a blank in the scientific literature of this country, for, although numerous treatises exist upon every branch, yet no work has hitherto appeared, comprising either succinctly or in detail, a comprehensive outline of natural history. It may appear presumptuous," they add, "on the part of the authors to attempt to grapple with such an extensive range of subjects"—and we regret to say that a careful examination of the book only shows us how well founded was this fear. There can be no doubt, in fact, that the authors have entirely miscalculated their strength, or they never would have attempted so arduous an undertaking. This is the more to be regretted, as we fear that a work with the above attractive title, brought out under the auspices of a publisher so well known for the first-rate character of his publications, will inevitably to a great extent preoccupy a place in our scientific literature which might be much more creditably filled.

The authors have fallen into an error in their very first step,—the general design and scope of the work. Let us first see what are the objects of travelling, or indeed of any, naturalists, and the conditions to be fulfilled by a 'Manual' intended for their use, and we may afterwards consider how far their wants are supplied in the work before us. The study of Natural History may safely be divided into two branches—the collection and arrangement of species, and the study of the structure, habits, and general classification of the numerous creatures inhabiting our planet. The same person may undoubtedly combine the study of both branches, but they may nevertheless be regarded to a great extent as distinct, and capable of being carried on independently of each other; accordingly we find that works on natural history are generally directed exclusively to one or other of them. Now the collector of species, whether for sale, or for his own personal gratification, desires, if possible, to ascertain the actual specific names of the objects which come in his way, their comparative rarity and so forth, so that nothing short of a "Species," or at all events a "Genera," with copious information as to the geographical distribution of the species, can serve his purpose. The reader need but reflect on the voluminous works devoted to description of portions only of the organic kingdoms of nature, to be convinced that an attempt to bring together all the species, or even

genera of animals and plants within the compass of anything short of a small library, must prove an entire failure. The observer of structure and habit, on the other hand, requires a guide-book through the intricacies of his subject, a compendious account of the actual state of science, a something to tell him what to observe, and to prevent his falling into the errors to which isolated observers are so liable, but which the light accumulated by the labours of his predecessors may to a great extent enable him to avoid. Such a work as this is still a desideratum in English scientific literature, for the labours of the present authors have been directed to quite another result. They have in fact fulfilled neither of the conditions which we have already seen to be necessary in a 'Manual of Natural History,'—their work is a bare sketch of a classification carried as far as the natural families, dealing no further with the structure of animals and plants than as it furnishes characters for the foundation of groups; it may in fact be defined as an engine for *naming* natural objects, which carries the student just half way, and then leaves him to find the remainder of the road by himself.

This objection would have applied with less force, had the space at the commencement of each of the larger divisions (of the animal kingdom at least), now devoted to a series of desultory generalities, not always perfectly correct, been made use of to furnish the reader with some general views of the *natural history* of the creatures under consideration; but as it is, the observer who may witness any isolated fact in the history of an animal, even should he be able to ascertain the family to which it belongs from this book, can never hope to find in it any clue to the series of phænomena with which the fact observed may stand in connection.

Before proceeding to examine the details of the book, we have to protest against a piece of pedantry which pervades the whole, and for which the authors appear to consider themselves deserving of great credit,—we allude to the practice of giving what are called English names to the different groups. If indeed good genuine English names could be invented for every group and species of animals and plants, we should have nothing more to say upon the subject, but we entertain the very strongest objection to the absurdities generally palmed off upon us under this title, and in this respect the present work is not one whit superior to its predecessors. We meet with the same attempts at Anglicizing by simply altering the termination of words from *a* or *æ* into *ans*; whilst the necessity for manufacturing names for so many minor groups has produced an infinity of multi-verbal combinations, which we should think would tend rather to repel than to attract a beginner. We cannot imagine a mind so constituted as to find such names as "Long-legged herbivorous Beetles," or "Hard-skinned serricorn Beetles," more expressive and easy of recollection than the corresponding scientific terms "Eupoda" and "Sternoxi;" and in some cases the English names are positive misnomers, as for example the term "Gill-lunged Batrachians," applied to those singular members of the class Batrachia in which gills and lungs are coexistent in the mature state.

We have devoted so much space to the consideration of the general characteristics of this work, that we have but little to spare for particular instances of the authors' sins. We must however select a few, if only to show how little dependence can be placed upon their judgment, even in making use of the materials which lay ready to their hands. Thus we find amongst the Annulosa, a class of Epizoa, or Fish-parasites, including Crustacean families, *Lernæidæ*, *Caligidæ* and their allies, and a miscellaneous assemblage of Helminthoid forms. Amongst the latter are included the *Linguatulidæ*! The entire group of Radiate animals also is a most extraordinary jumble. We find the Rotifera placed in this division, between the Acalephæ and the Polyzoa!; these are followed by the Cœlelmintha, these by the true Polypes, after which we come to the Sterelmintha, or Cestode and Trematode worms. That such an arrangement as this should have occurred to any one engaged upon a Manual of Natural History, will, we should think, excite a little surprise in the reader's mind.

Amongst the Sterelmintha we find an order of Cystic worms, without a single hint of the extraordinary discoveries of Van Beneden, Vogt, Siebold and others, which have now proved the cystic worms to be merely phases in the development of the Tape-worms. In like manner the wonderful mode of reproduction prevailing amongst the Medusæ, which has given rise to Steenstrup's theory of the "Alternation of generations," is passed over without a word of notice; but as if to make up for the absence of information for which the reader might reasonably look, we are favoured with some statements concerning the Acalephæ, which certainly have the merit of novelty to recommend them. Thus we learn for the first time, and we must confess not without surprise, that *Cydippe* is "often seen . . . making its way slowly by the regular contraction and expansion of its umbrella-like body." In *Beroë* we are told, "the organs of progression are in the form of long filaments, which enable their possessors to roll along through the water in a very rapid manner;" and Mr. Huxley will be astonished to learn, that "those curious double gelatinous animals, the *Salpæ*," are placed "in the Diphydous order." These statements all occur within the compass of a single page (page 336)! We do not pretend to say that this is an average sample of the work, but there are certainly few pages of the Zoological portion in which some errors are not to be met with.

Of the Botanical portion we need say but little, the authors themselves admitting that they have employed "a slight modification of the scheme offered by the learned author of the 'Vegetable Kingdom.' The only modification that we can perceive is, that they have reversed the learned Doctor's arrangement, and raised his "Alliances" to the rank of "Orders." The characters of the families (Orders, Lindl.) appear to be copied almost verbatim, except the omission here and there of characters which we must confess seem not unfrequently to be of some importance.

It is not so easy to ascertain the source from which the system of Mineralogy is derived, but as it is undoubtedly the most useless part of the book, it is just possible that it may be the most original. We

would ask any mineralogist how he would like to have no better guide in the determination of a mineral than such a character as the following :—

IV. ORDER Molibdexides.

Minerals containing metals of the lead series, in various states of combination; solid.

1. Family.—*Molibdides.*—Minerals containing lead, either native or in combination.—Occurs 1, *native*, monometric, H. 1·5, sp. gr. 11·381; very rarely; 2, as *Sulphuret* or "Galena," monometric, H. 2·5, sp. gr. 7·5, colour and streak lead-gray, easily fused, frangible in beds and veins in crystalline and uncrystalline rocks; 3, as *Oxide* or "Minium," pulverulent, in minute rhombic prisms; sp. gr. 4·6, in veins of galena and calamine; 4, as *Carbonate* or "Cerusite," in right rhombic prisms, H. 3–3·5, sp. gr. 6·4, lustre adamantine, colour white or gray, very brittle, in many lead mines; 5, as *Phosphate* or "Pyromorphite," in hexagonal prisms, H. 3·5–4, sp. gr. 7; colour green, yellow, or brown; lustre resinous, brittle, in veins with other lead ores; 6, also less frequently combined with *selenium, tellurium, antimony, arsenic, vanadic, chromic, molybdic, and tungstic acids.*—Metallic lead fuses at 612° F., its soluble salts give a black precipitate with hydrosulphuric acid.—*Symb.* Pb.

This is followed by 2. Family.—*Baryides*!, but we need go no further.

In conclusion, there is one point to which we must advert, although in so doing we shall perhaps be running some risk of placing ourselves in the same category with the famous Shandean critic, who carried his rule and compasses in his pocket, and determined the merits of a book by the squareness of its corners,—we allude to its mechanical execution. We have always entertained an opinion that the great object of a "Manual" should be to furnish its readers with the greatest possible amount of information in the smallest possible amount of space, but the present work appears to have been got up on a directly opposite principle,—it is printed in a positively *large* type, with spaces between the lines, and the characters of the families are considerably indented, so that in most cases at least a tenth part of the page is actually lost. Had a type of moderate size been employed and the present absurd arrangement of the pages avoided, there is no doubt that at least half as much more information might have been got into the same space.

We have completed a most thankless task, for few things can be more distasteful to us than to speak unfavourably of the efforts of others, especially when, as in the present case, they appear to have devoted considerable labour to a mistaken attempt to aid in the diffusion of knowledge. But this book unfortunately by no means satisfies the expectations called up by its title, and there can be no doubt that, as far as it is concerned, the author of the next 'Manual of Natural History' may justly echo the authors' own lamentation, that "no work has yet appeared, comprising either succinctly or in detail, a comprehensive outline of natural history."